

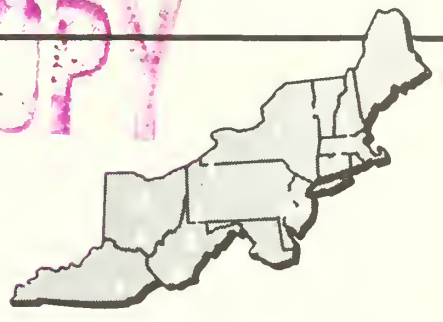
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Northeastern Forest Experiment Station



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THE VOLUME OF SELECTED HARDWOOD SPECIES SUITABLE FOR TURNERY BOLTS IN MAINE, 1970

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Abstract.—During the last Forest Survey of Maine, data were collected about the four hardwood species—paper birch, yellow sugar maple, and beech—that are used by turneries. Analysis of the data showed that only about 18 percent of the volume of growing stock in trees 8 inches d.b.h. and larger in these species is acceptable for turning bolts, according to the criteria used.

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Maine has more wood-turning plants than any other state. In 1970 the wood-turning industry had 38 active plants in Maine. In 1958 the industry consumed 41.9 million board feet of wood; in 1970 it consumed 44.5 million board feet.

These plants produce a variety of products ranging from dowels, furniture parts, and brush handles to thread spools, textile bobbins, billiard cues, and ladies' shoe heels. The principal species used by the industry is yellow birch. But paper (white) birch, sugar (hard) maple, and beech are also utilized extensively. Aspen (popple), red (soft) maple, and white ash are also utilized, but not as extensively as the other species.

In recent years turners have encountered increasing difficulty in obtaining suitable bolts for turning. The bolts, from which are sawed the blanks to be turned, must be sound and relatively knot-free. Because such material is usually scattered in the forests, few logging operations are undertaken solely for the pro-

duction of turnery bolts. More often material of turnery-bolt quality is harvested in sawlog and pulpwood operations. Often suitable material is not segregated but is sold as sawlogs or pulpwood, though it could provide a greater return as turnery bolts.

The recently completed resurvey of Maine's timber resources provides a wealth of information about the volume, growth, removal, and species composition of the State's timber resources. However, it does not provide these data in a form that can be related readily to the volume of wood that is suitable for turnery bolts. This note provides this information by combining the specifications for turnery bolts used by the wood-turning industry in Maine with data gathered as part of the forest survey.

The four species most commonly utilized for turnery bolts in Maine—paper birch, yellow birch, sugar maple, and beech—were analyzed to determine the volume of growing stock that is acceptable as turnery bolts. To

do this, growing-stock trees 8 inches d.b.h. and larger were segregated according to two limiting criteria: (1) no external evidence of rot, and (2) a "surface defect code" of 4 or better.

The surface defect code is used in the forest survey as a measure of freedom of the bole from knots, scars, and other indicators of unclear or unsound wood. The code is the number of 2-foot clear cuttings in the first 16 feet of bole length. Thus a surface defect code of 4 means that there are 8 feet in clear cuttings, and a code of 8 means 16 feet in clear cuttings. The selection of these two external indicators of wood quality is based on procurement specifications supplied by several wood-turning companies in Maine.

Tables of growing stock, by species and diameter class, that meet or exceed the minimum specifications in the State and in each of the nine geographic sampling units used in the resurvey of Maine, are attached. A small portion of the volume shown may be in bolts that do not meet the minimum specifications for turnery bolts. However, we feel that this is offset by a similar volume of turnery-grade bolts in trees that do not meet the criteria established here.

The results of this analysis show that only a little more than 18 percent of the growing-stock volume in these four species is suitable for turnery bolts. By species, the percentages are: paper birch—18.7 percent; yellow birch—22.5 percent; sugar maple—19.9 percent; and beech—10.0 percent.

The most abundant species, statewide, is sugar maple—244 million cubic feet. Yellow birch totals 167 million cubic feet, paper birch 138 million cubic feet, and beech only 66 million cubic feet. In total there are 615.8 million cubic feet of growing stock in Maine's timber inventory that meet or exceed the specifications. Of this volume, 62 percent is in trees 12 inches d.b.h. and smaller.

All four of the important turnery species are being cut heavily in Maine. For yellow birch, growing-stock removals exceed growth. For sugar maple, growth and removals are about equal. Though removals of paper birch

and beech do not exceed growth, they are rapidly approaching that point.

Given the small proportion of suitable material in these four species—and the precarious growth-to-removals situation—it appears that Maine turners face an even more difficult task in supplying their firms in future years than they have in the past.

There seem to be several ways to combat this situation. One is to institute an active, industry-sponsored, intensive forest-management program geared specifically to the production of top-quality trees of most desired species for turnery bolts. This would require active assistance to landowners because most turners do not own large tracts of timberland.

Another approach is to develop the technology for utilizing more of those species that are more abundant—such as red maple and aspen—and to develop the means to utilize the lower quality material that is not now considered suitable for turned products. Along these same lines, the development and employment of machines that would allow for more complete use of the existing raw material would effectively expand the usable resources. For instance, the use of band bolter mills and strippers would reduce losses from saw kerf.

Still another approach that would help to alleviate the scarcity of turnery bolts is closer cooperation between the turning industry and other users of roundwood to insure that raw material of turnery-bolt quality is not converted into lower-value products such as pulpwood or sawlogs. The failure to realize the highest possible return of harvested wood represents a loss to both industries. It is true that in some cases turnery bolt material is being segregated from sawlogs, but this practice is not nearly widespread enough. The recent trend toward integrated harvesting may be an added spur to this practice.

Reference

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Table 1.—Volume of selected species suitable for turnery bolts, by species and geographic sampling unit, Maine, 1970

[In thousands of cubic feet]

Geographic unit	Species				
	Paper birch	Yellow birch	Sugar maple	Beech	All species
Aroostook Co.	16,500	34,606	74,137	35,876	161,119
Capitol Region	6,965	6,394	10,402	843	24,604
Casco Bay	10,000	3,742	2,037	2,667	18,446
Hancock Co.	3,990	2,809	813	—	7,611
Penobscot Co.	3,122	12,463	24,428	3,293	43,307
Piscataquis Co.	22,735	41,308	52,688	13,368	130,099
Somerset Co.	18,738	26,502	35,200	3,314	83,754
Washington Co.	24,651	5,815	4,407	774	35,647
Western Maine	31,579	33,792	40,348	5,451	111,170
State total	138,280	167,431	244,460	65,586	615,757

Table 2.—Volume of selected species suitable for turnery bolts, by species and diameter class, Maine, 1970

[In thousands of cubic feet]

D.b.h. class (inches)	Species				
	Paper birch	Yellow birch	Sugar maple	Beech	All species
8	36,472	24,240	36,954	11,339	109,005
10	46,553	27,250	47,430	19,161	140,394
12	20,449	42,829	43,500	25,172	131,950
14	20,727	31,918	36,659	7,978	97,282
16	6,579	21,655	29,437	1,003	58,674
18	4,925	7,077	19,097	933	32,032
20+	2,575	12,462	31,383	—	46,420
Total	138,280	167,431	244,460	65,586	615,757

Table 3.—Volume of selected species suitable for turnery bolts, by species and diameter class, Maine, 1970

[In thousands of cubic feet]

D.b.h. class (inches)	Species				
	Paper birch	Yellow birch	Sugar maple	Beech	All species
AROOSTOOK COUNTY					
8	1,451	4,795	9,098	3,788	19,132
10	3,990	4,736	17,111	9,045	34,882
12	1,468	6,230	11,223	18,992	37,913
14	6,333	8,364	11,953	3,118	29,768
16	1,590	5,110	13,241	—	19,941
18	794	2,966	2,196	933	6,889
20+	874	2,405	9,315	—	12,594
Total	16,500	34,606	74,137	35,876	161,119
CAPITOL REGION (Kennebec, Knox, Lincoln, and Waldo Counties)					
8	1,671	—	7,080	843	9,594
10	3,451	2,718	1,190	—	7,359
12	925	914	1,045	—	2,884
14	918	—	—	—	918
16	—	2,762	1,087	—	3,849
18	—	—	—	—	—
20+	—	—	—	—	—
Total	6,965	6,394	10,402	843	24,604
CASCO BAY REGION (Androscoggin, Cumberland, Sagadahoc, and York Counties)					
8	2,693	932	2,037	1,767	7,429
10	6,374	1,851	—	900	9,125
12	933	—	—	—	933
14	—	959	—	—	959
16	—	—	—	—	—
18	—	—	—	—	—
20+	—	—	—	—	—
Total	10,000	3,742	2,037	2,667	18,446
HANCOCK COUNTY					
8	3,075	—	—	—	3,075
10	—	—	813	—	813
12	915	911	—	—	1,826
14	—	910	—	—	910
16	—	—	—	—	—
18	—	—	—	—	—
20+	—	988	—	—	988
Total	3,990	2,809	813	—	7,611
PENOBSCOT COUNTY					
8	711	645	2,622	—	3,978
10	749	2,127	2,710	1,571	7,157
12	—	5,444	3,838	1,722	11,004
14	—	1,666	3,104	—	4,770
16	1,622	2,581	1,118	—	5,361
18	—	—	5,824	—	5,824
20+	—	—	5,212	—	5,212
Total	3,122	12,463	24,428	3,293	43,307
PISCATAQUIS COUNTY					
8	4,482	6,792	3,561	3,381	18,216
10	6,873	3,790	8,219	4,226	23,108
12	3,908	11,918	8,810	940	25,576
14	2,367	5,558	12,227	3,818	23,970
16	2,527	4,962	6,470	1,003	14,962
18	1,699	1,647	3,291	—	6,637
20+	879	6,641	10,110	—	17,630
Total	22,735	41,308	52,688	13,368	130,099

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Table 3.—Continued

D.b.h. class (inches)	Species				
	Paper birch	Yellow birch	Sugar maple	Beech	All species
SOMERSET COUNTY					
8	6,614	5,285	6,680	719	19,298
10	5,746	4,549	4,915	735	15,945
12	3,995	4,139	11,746	818	20,698
14	2,383	7,199	7,309	1,042	17,933
16	—	4,592	2,195	—	6,787
18	—	—	1,200	—	1,200
20+	—	738	1,155	—	1,893
Total	18,738	26,502	35,200	3,314	83,754
WASHINGTON COUNTY					
8	6,118	1,356	729	—	8,203
10	10,329	1,429	1,630	—	13,388
12	5,154	1,463	928	774	8,319
14	2,256	769	—	—	3,025
16	—	—	—	—	—
18	794	798	—	—	1,592
20+	—	—	1,120	—	1,120
Total	24,651	5,815	4,407	774	35,647
WESTERN MAINE REGION (Franklin and Oxford Counties)					
8	9,657	4,435	5,147	841	20,080
10	9,041	6,050	10,842	2,684	28,617
12	3,151	11,810	5,910	1,926	22,797
14	6,470	6,493	2,066	—	15,029
16	800	1,648	5,326	—	7,774
18	1,638	1,666	6,586	—	9,890
20+	822	1,690	4,471	—	6,983
Total	31,579	33,792	40,348	5,451	111,170

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